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Patient Smart Reader®: Evaluation of a traceability system for peripheral venous catheters and urinary catheters.

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Introduction

Peripheral venous catheter(PVC) and urinal catheter(UC) infections are responsible for many acquired infections in hospitals with 10 000 deaths/year. The fight against the unjustified insertion of the catheter is possible with a good traceability. The significant improvement of the catheter traceability's among hospitalized patients have been showed with a new informatics tool named Patient Smart Reader (PSR) which is compared to the classical system of traceability. The aim of our study is to evaluate the traceability of catheters with this new system compared with a gold standard.

Materials

Each room was equipped with the code bar scanner PSR. The information transfers through the wifi connection to the server. The intelligence of the system lies in the server, which manages and provides results and alarms in real time with Nurse's office back screen.

Methods

A prospective study evaluating the diagnostic value of a test was implemented by evaluating the sensitivity and specificity of this test. All patients who came in our unit were included in our study. The necessity of peripheral venous catheters and urinary catheters was definite by senior doctor. Criterion of judgment was the number of catheters per day per patient and daily observation in real time was established as the gold standard (GS).

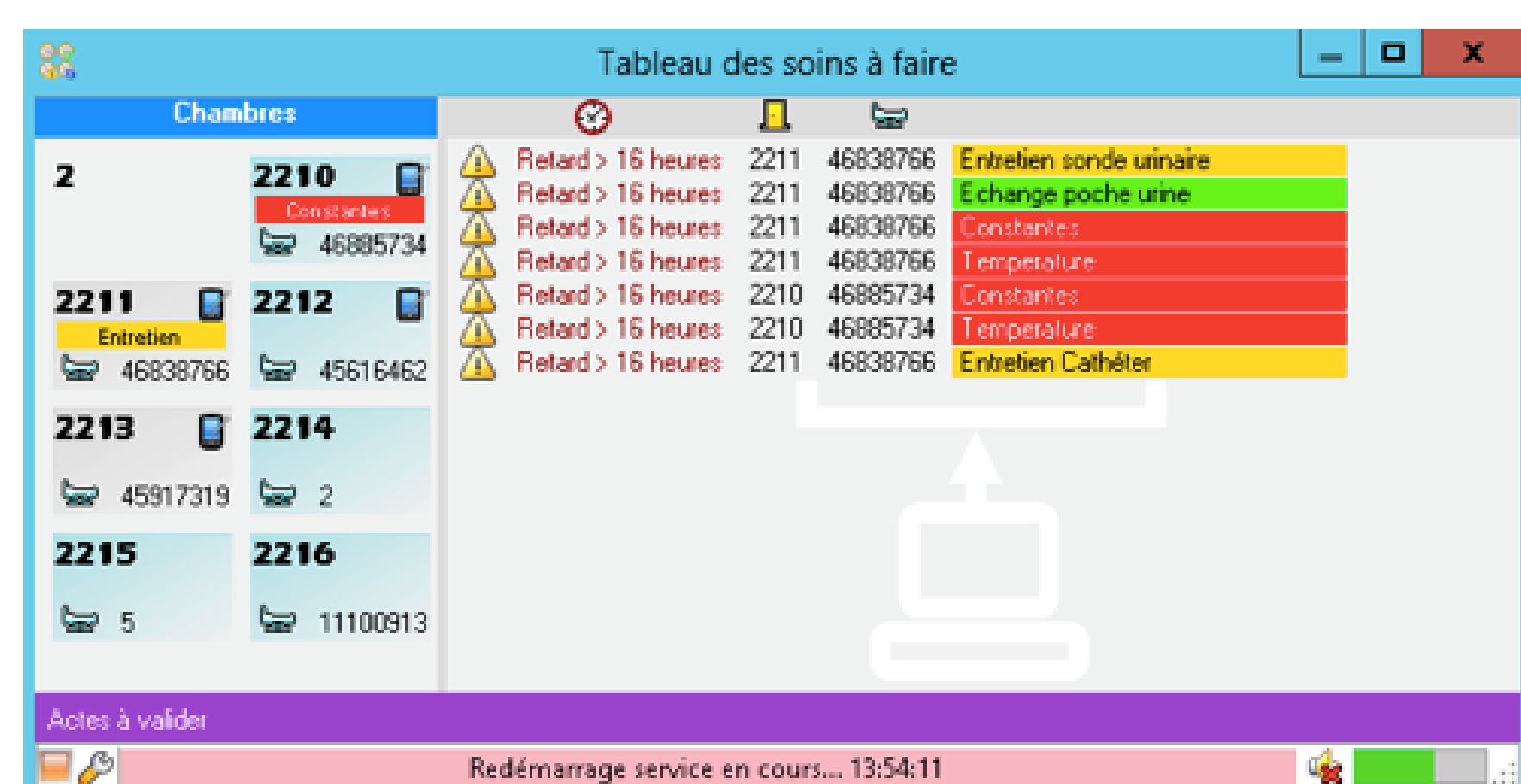
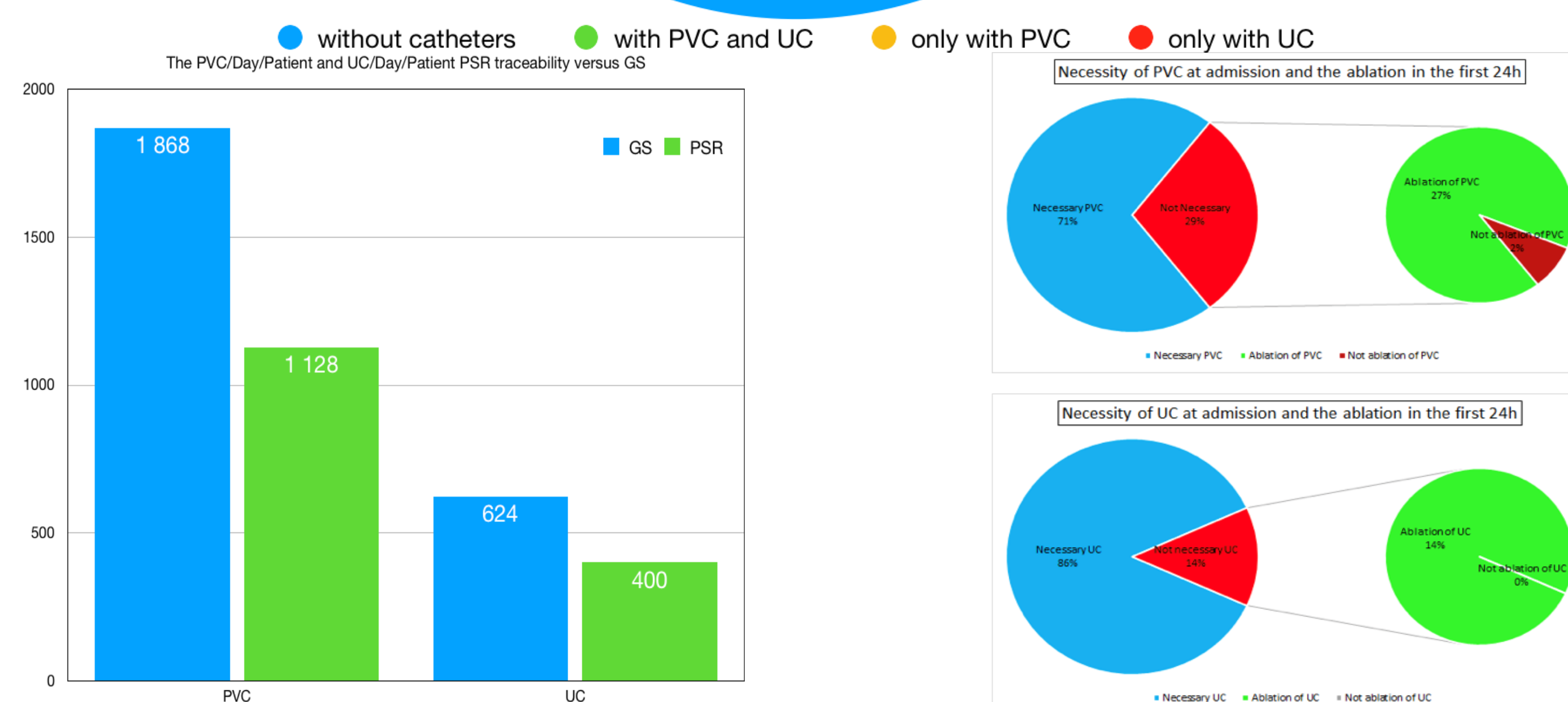
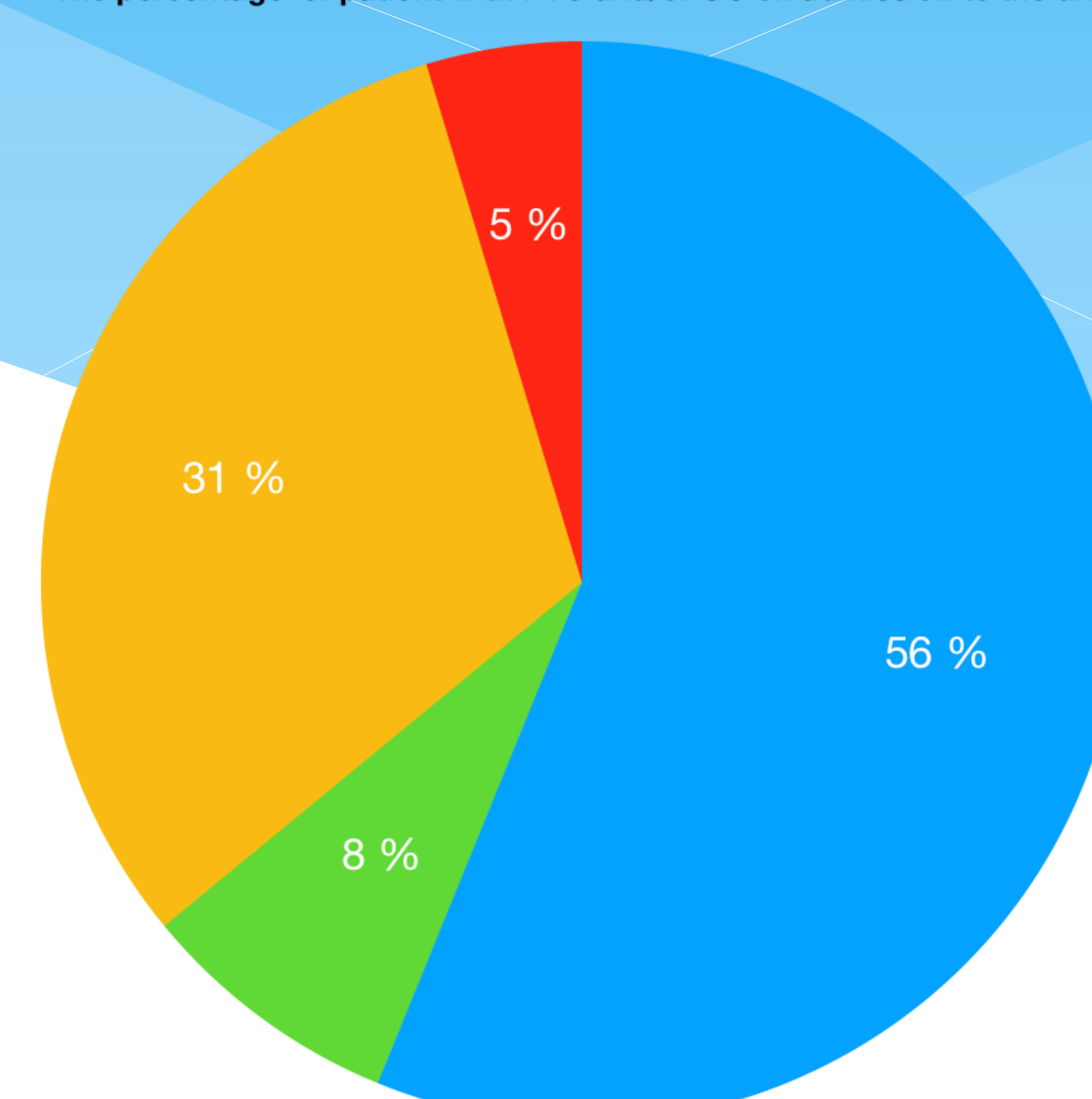


Fig 1. The Patient Smart Reader.

Fig 2. Nurse's office back screen

Results

The percentage of patient with PVC and/or UC on admission to the unit



PVC	PSR +	PSR -	
GS +	1195	1364	2559
GS -	121	1996	2117
	1316	3360	4676

UC	PSR +	PSR -	
GS +	278	716	994
GS -	27	3655	3682
	305	4371	4676

ACCURACY	68,2 %
SENSITIVITY	90,8 %
SPECIFICITY	59,4 %
TRUE POSITIVE RATE	90,8 %
FALSE POSITIVE RATE	40,6 %

ACCURACY	84,1 %
SENSITIVITY	91,1 %
SPECIFICITY	83,6 %
TRUE POSITIVE RATE	91,1 %
FALSE POSITIVE RATE	16,4 %

Accuracy, sensitivity and specificity of the Patient Smart Reader (PSR) traceability compared to real observation established as the gold standard (GS) of Peripheral Venous and Urinary catheters/day/patient

Conclusion

With a specificity about 60% for the traceability of catheters with PSR, we establish a protocol to evaluate this traceability system. We are going to use it to fight against unjustified insertion of catheters. To improve the specificity for traceability with PSR at 85%, we need to elaborate and implemented a specific individual engaging training for catheters traceability.